

but not years of education ($p=0.65$). WRAT-3 predicted CVLT-II learning ($b=0.32$, $p=0.04$), immediate recall ($b=0.16$, $p=0.005$), and delayed recall performances ($b=0.15$, $p=0.005$), while education did not (p -values >0.14). All significant results persisted after FDR correction. WRAT-3 scores explained an additional level of variance beyond the covariates and education alone for FAS ($\Delta R=18\%$), CFL ($\Delta R=13\%$), Animal Naming and Vegetable Naming ($\Delta R=3\%$), BNT ($\Delta R=18\%$), and CVLT-II learning ($\Delta R=2\%$), immediate recall ($\Delta R=4\%$), and delayed recall ($\Delta R=3\%$).

Conclusions: Reading level more strongly associated with performance on several verbally mediated neuropsychological measures than years of education. For all measures, the addition of reading level significantly increased the amount of variance explained by the model compared to covariates and education alone, which aligns with existing research. However, most of this past work looks at individuals with lower levels of educational quality. Because our cohort was highly educated and at the upper end of the reading spectrum, our results suggest that reading level is important to consider even for more highly educated individuals. Therefore, reading level is a critical variable to consider when interpreting verbally mediated neuropsychological measures for individuals across the educational spectrum.

Categories:

Assessment/Psychometrics/Methods (Adult)

Keyword 1: assessment

Keyword 2: academic achievement

Keyword 3: neuropsychological assessment

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41 Explorations into the Salthouse Listening Span Task: Cognitive Correlates and Potential Impact of Emotional Functioning

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Objective: The psychometric properties of the Salthouse Listening Span (SLS; Salthouse & Babcock, 1991) task are relatively unknown.

Previous research has demonstrated that SLS performance is positively associated with processing speed and vocabulary (Salthouse, 2005). Further research has documented that SLS performance is useful in differentiating attention deficit/hyperactive disorder from other clinical conditions (Nikolas, Marshall, & Hoelzle, 2019). While the SLS task is purported to measure working memory, relatively little is known about how the task is related to frequently administered neuropsychological measures. Furthermore, it remains unclear whether emotional functioning may affect task performance. The current study investigates associations between frequently administered tasks and the SLS as well as the impact of anxiety and depression on SLS performance.

Participants and Methods: A battery of neuropsychological tasks and self-report measures was administered to undergraduates [$N=161$, 75.2% female, $Mage=19$ (1.06), $MGPA=3.5$ (.35)]. Participant exclusion based on failed performance validity task, non-native English speaking, and/or task incompleteness resulted in a final sample of $N=131$. Participants completed the SLS, a task where one answers questions about sentences read aloud to them, while simultaneously attempting to remember the final word from sentences. SLS performance was quantified two ways: (1) longest span score (SLS-LSS) and (2) total words recalled correctly (SLS-WRC). Anxiety and depression were measured via the Beck Anxiety Index (BAI) and the Beck Depression Index (BDI). Two groups were derived based on participant BAI and BDI responses: low to mild emotional distress ($N=99$, scores of 0-15 on BAI, BDI, or both) and moderate to severe emotional distress ($N=33$, scores of 16-63 on the BDI, BAI, or both). Correlations were conducted between the SLS and WAIS-IV: digit span, arithmetic, coding, and symbol search, DKEFS: verbal fluency, and WTAR. A one-way ANOVA was run to examine potential differences in performance on the SLS based on levels of emotional distress.

Results: The SLS-LSS had negligible correlations with verbal fluency, coding, or symbol search performances ($r<0.1$). SLS-LSS demonstrated a small to medium positive correlation with arithmetic [$r(130)=0.17$, $p=.06$], digit span [$r(130)=0.27$, $p=.002$], and WTAR [$r(130)=.27$, $p=.002$]. SLS-WRC did not demonstrate meaningful correlations with any cognitive domain. Overall, the presence of moderate anxiety and/or moderate depression did not significantly affect performance on SLS-

LSS [$F(1, 130) = 1.5, p = 0.22$] or SLS-WRC [$F(1, 132) = 0.55, p = 0.46$].

Conclusions: The SLS is a promising cognitive task with little research investigating its psychometric properties. Overall, minimal correlations were observed with tasks quantifying executive functioning, verbal abilities, and processing speed. Lack of strong correlations indicate that more research should be conducted to fully understand what this task is measuring. Moreover, the SLS-WRC score did not appear to have significant correlations across domains, indicating that the SLS-LSS may be more strongly related to working memory and general intelligence.

Encouragingly, emotional functioning did not appear to impact performance on this task. While the SLS appears to have some relation to IQ, more research should be conducted to determine what this task measures and what variables may affect task performance.

Categories:

Assessment/Psychometrics/Methods (Adult)

Keyword 1: neuropsychological assessment

Keyword 2: cognitive functioning

Keyword 3: emotional processes

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42 Cognitive Impairment Stage and Dementia Syndromes Explain Latent Structure Variability on the Neuropsychiatric Inventory Questionnaire (NPI-Q)

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Objective: Neuropsychiatric/behavioral-psychological symptoms of dementia (BPSD) frequently contribute to worse prognosis of patients with neurodegenerative conditions. BPSD are commonly measured via a brief, informant-rated version of the Neuropsychiatric Inventory (NPI), the NPI-Q. Previously (see our other submission to this conference), we

established optimal latent structures by comparing different factor models in the literature using confirmatory factor analyses (CFAs). However, questions remain as to why so many different models were found in the literature. One possibility is sampling differences, including different proportions of individuals across cognitive stages (e.g., mild cognitive impairment, moderate dementia) or syndromes (e.g., Alzheimer's amnesic syndrome, Dementia with Lewy Bodies). We tested this hypothesis by subjecting candidate models to measurement invariance (MI) analyses stratified by cognitive stage and syndrome.

Participants and Methods: Individuals were included if they had completed an NPI-Q during their first visit at an Alzheimer Disease Research Center reporting to the National Alzheimer Coordinating Center (NACC). This resulted in 20,500 individuals (57% female; 80% White, 13% Black, 8% Hispanic), with a mean age of 71 ($SD = 10.41$) and 15 average years of education ($SD = 3.43$). Regarding staging, 75.9% of individuals did not meet criteria for all-cause dementia, whereas 24.1% individuals had all-cause dementia. Regarding syndromes, 35.6% had an Alzheimer's presentation ("AD-type") and 5.6% had either a behavioral variant frontotemporal dementia or Lewy-Body dementia presentation ("behavioral-type"). A 3-factor and 4-factor model were subject to MI across these groupings. We conducted MI analyses for equal forms, equal loadings, and equal intercepts using the *lavaan* R package with a diagonally weighted least squares (DWLS) estimator.

Results: The 3-factor model demonstrated good fit among individuals experiencing ($CFI = 0.965, TLI = 0.955$) and not experiencing ($CFI = 0.984, TLI = 0.979$) dementia, as well as among AD-type ($CFI = 0.983, TLI = 0.978$) presentations, but had borderline poor fit for behavioral-type ($CFI = 0.932, TLI = 0.912$) presentations. The 4-factor model had better fit among those experiencing ($CFI = 0.985, TLI = 0.977$) and not experiencing ($CFI = 0.995, TLI = 0.992$) dementia. Additionally, the 4-factor model demonstrated good of fit for AD-type ($CFI = 0.993, TLI = 0.989$) and poorer fit for behavioral-type ($CFI = 0.949, TLI = 0.922$) syndromes. Chi-square differences suggested that equal loading and equal intercept hypotheses should be rejected for both 3- and 4-factor models, for both staging and syndromal groupings. However, relative fit indices suggested that the equal form,